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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/461,805	08/25/2009	Violeta Colova	2436.17.UTL	2097

21901 7590 04/18/2017

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EXAMINER
PARA, ANNETTE H

ART UNIT	PAPER NUMBER
1661	

NOTIFICATION DATE	DELIVERY MODE
04/18/2017	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VIOLETA COLOVA

Appeal 2016-002431
Application 12/461,805
Technology Center 1600

Before DONALD E. ADAMS, JEFFREY N. FREDMAN, and DAVID COTTA, *Administrative Patent Judges*.

FREDMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal[1] under 35 U.S.C. § 134 involving claims to synchronized strains of subepidermal cells of muscadina grape pericarp with high flavonoid content. The Examiner rejected the claims as indefinite and as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

Statement of the Case

Background

"Exceptionally powerful anti-oxidants recently identified and isolated in many fruits and vegetables promise to generate significant health benefits; particularly in the area of disease prevention" (Spec. ¶ 2). "In particular, muscadine grapes (*Muscadinia rotundifolia)* are known to contain elevated

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[1] Appellant identifies the Real Party in Interest as Violeta Colova (*see* App. Br. 2).

levels of total phenolics compared to the European grapes" (*id.*). "[I]t has been shown that the therapeutic effect of wine and grapes is dependant on species, location, year (annual climate), processing etc. Therefore, reliance on red wine or grapes as a source of these compounds does not lead to a homogeneous or consistent supply of these compounds" (Spec. ¶ 4).

The Specification teaches "there is a need for natural (phyto) compositions that are better defined, consistent and highly bioavailable" (Spec. ¶ 6).

The Claims

Claims 4, 7, and 11 are on appeal.[2] Claim 4 is representative and reads as follows (underlining omitted):

> 4. Synchronized strains of subepidermal cells of muscadina grape pericarp with high flavonoid content from sterilized berries of harvested excised and sterilized berries comprising:
>
> a) sterilized berries of harvested excised plants and sterilized berries of said muscadina grape pericarp having multiple insertions on each sterilized berry skin, said berries being in a culture media containing vitamins, plant growth regulators, a carbohydrate source and a solidifying agent, and comprising high flavonoid content.

The issues

A. The Examiner rejected claims 4, 7, and 11 under 35 U.S.C. § 112, second paragraph as indefinite (Ans. 2).

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[2] The current claim set reflects the claims submitted in the Response filed July 16, 2014 because the Examiner denied entry to the claims submitted After Final on Oct. 14, 2014 in the Advisory Action mailed Nov. 7, 2014.

B. The Examiner rejected claims 4, 7, and 11 under 35 U.S.C. § 103(a) as obvious over Cormier,[3] Gray,[4] and Pastrana-Bonilla[5] (Ans. 3–4).

A. 35 U.S.C. § 112, second paragraph - indefiniteness

The issue with respect to this rejection is: Does the evidence of record support the Examiner's conclusion that the claims are indefinite?

Principles of Law

Miyazaki stated that "if a claim is amenable to two or more plausible claim constructions, the USPTO is justified in requiring the applicant to more precisely define the metes and bounds of the claimed invention by holding the claim unpatentable under 35 U.S.C. § 112, second paragraph, as indefinite." *Ex parte Miyazaki*, 89 USPQ2d 1207, 1211 (BPAI 2008).

Analysis

We will address each indefiniteness issue separately.

First, the Examiner finds: "It is unclear if applicant is claiming subepidermal cells or sterilized berries because cells cannot comprise berries but berries can comprise subepidermal cells" (Ans. 2).

Appellant contends "claim 4 is not indefinite as the claim admits of berries in the mixture" (App. Br. 5).

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[3] Cormier et al., *Vitis vinifera L. (Grapevine): In Vitro Production of Anthocyanins*, 24 MEDICINAL AND AROMATIC PLANTS V BIOTECHNOLOGY IN AGRICULTURE AND FORESTRY 373–386 (1993) ("Cormier").

[4] Gray et al., *In vitro micropropagation and plant establishment of muscadine grape cultivars (Vitis rotundifolia)*, 27 PLANT CELL, TISSUE AND ORGAN CULTURE 7–14 (1991) ("Gray").

[5] Pastrana-Bonilla et al., *Phenolic Content and Antioxidant Capacity of Muscadine Grapes*, 51 J. AGRIC. FOOD. CHEM. 5497–5503 (2003) ("Pastrana-Bonilla").

We agree with the Examiner that a preamble drawn to "strains of subepidermal cells" comprising "sterilized berries" as recited in claim 4 might be read in a variety of different ways. One approach, taken by Appellant, is to read the claim as requiring the subepidermal cells but permit the presence of berries due to the "comprising" language (*see* App. Br. 5). Another approach reads the berries as the source from which the synchronized strains of subepidermal cells are generated. The Examiner's third approach contends: "It is unclear how a species can comprise a genus. Berries comprise 'include' 'contain' or 'are characterized by' cells but not the opposite" (Ans. 5).

We agree with the Examiner that claim 4 is indefinite with regard to what constitutes the essential component of the claim, a strain of subepidermal cells or a culture of berries or some combination of these components, and this indefiniteness can best be addressed by claim amendments proposed by Appellant. As *Zletz* notes "during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed." *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989).

Second, the Examiner finds: "It is unclear if the berries or the medium have high flavonoid content" (Ans. 2).

Appellant contends "the amount of flavonoid need not be quantified to render this "comprising' and therefore open claim definite" (App. Br. 5).

We agree with the Examiner that the final phrase in claim 4 "comprising high flavonoid content" may be linked to either "sterilized berries" or to "culture media". That is, claim 4 does not clearly identify

whether the high flavonoid content is found in the berries, in the culture media, or in both. *Zletz*, 893 F.2d at 321.

Third, the Examiner finds: "'High' is a relative term with no comparative basis" (Ans. 2).

We do not agree with this rejection because the Specification teaches "muscadine grapes (*Muscadinia rotundifolia)* are known to contain elevated levels of total phenolics compared to the European grapes" (Spec. ¶ 2), thereby assigning a meaning to "high" which is elevated levels relative to the amounts found in European grapes.

Fourth, the Examiner finds: "It is unclear what is/are inserted on each sterilized berry skin" (Ans. 2).

Appellant contends "In this connection, the specification in paragraph [0010] lines 7 and 8 [is] clear when it states '. . . multiple insertions with sterile scalpel blade were made on the surface of each berry'" (App. Br. 6).

We find the Examiner has the better position. While the Specification teaches one type of insertions with a blade, the claim does not limit the insertions to scalpel blade cuts, but reasonably encompasses other meanings of the term insertion such as the addition of components to the berries, with no clear delineation of what can be so added to the berries.

Fifth, the Examiner finds: "Claim 11 should be a Markush grouping. Two different plants are recited" (Ans. 2).

This is not at issue because Appellant "does not object to placing claim 11 in Markush format and indeed so amended it; however, the amendment was not entered in the reply to the Final Rejection" (App. Br. 5).

Conclusion of Law

The evidence of record supports the Examiner's conclusion that the claims are indefinite.

B. 35 U.S.C. 103(a) over Cormier, Gray, and Pastrana-Bonilla

The issue with respect to this rejection is: Does the evidence of record support the Examiner's conclusion that the prior art renders claim 4 obvious?

Findings of Fact

1. Cormier teaches:

> Cultures of *Vitis vinifera* L. cv. Gamay Fréaux were provided to us. . . . The cell culture had been established in 1978 from pulp fragments of young fruits on a culture medium comprised of B5 macroelements (Gamborg et al. 1968), Murashige and Skoog (1962) microelements, and Morel (1970) vitamins and supplemented with (per liter) 250 mg casein hydrolysate, 20 g sucrose, 0.1 mg α-naphthaleneacetic acid, and 0.2 mg kinetin, and solidified with 8 g agar. The cell cultures were kept at 25 °C under a 12 h/day photoperiod. The growth cycle of callus lasted 4 weeks, and at the end of each cycle intensely pigmented callus portions were selected and subcultured until a uniformly pigmented material was obtained.

(Cormier 383).

2. Cormier teaches: "Our results demonstrate that special culture protocol can be developed to favor the formation of more biochemically evolved anthocyanins in plant cell culture. This is of particular interest in the development of anthocyanin-based food colorants" (Cormier 379).

3. Gray teaches:

> To define and optimize a method for obtaining explants, apical meristems were obtained from shoots of 'Dixie' and

> 'Fry' at five distinct developmental stages. Developmental stages were subjectively categorized based on length of shoots (0.5, 1, 2, 10 and 60 cm) that developed from previously dormant vines after spring budbreak. Explants were harvested when the most rapidly growing shoots for each cultivar reached the desired lengths.

(Gray 8, col. 2).

4. Pastrana-Bonilla teaches "[m]uscadine grapes *(Vitis rorundifolia* Michx.) are indigenous to the southeastern United States . . . Antioxidant compounds include vitamins, phenols, carotenoids, and flavonoids" (Pastrana-Bonilla 5497, col. 1).

5. Pastrana-Bonilla teaches "[f]ruits and leaves from 10 muscadine grape cultivars, namely, five bronze (Carlos, Early Fry, Fry, Summit, and Late Fry) and five purple (Paulk, Cowart, Supreme, Ison, and Noble), grown in southern Georgia were provided . . . and used for this study" (Pastrana-Bonilla 5498, col. 1).

6. Pastrana-Bonilla teaches "the nutraceutical industry may use the muscadine seeds and skins as potential sources of phenolics" (Pastrana-Bonilla 5500, col. 2 to 5501, col. 1).

Principles of Law

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

Analysis

We adopt the Examiner's findings regarding the scope and content of the prior art (Ans. 3–4; FF 1–5) and agree that the claimed composition

would have been obvious over the teachings of Cormier, Gray, and Pastrana-Bonilla. We address Appellant's arguments below.

Appellant contends "nowhere in Gray et al. is there any disclosure or hint of producing applicant's plant metabolites in vitro by active growing and functioning cell lines" (App. Br. 12). Appellant also contends that "Pastrana-Bonilla et al. has no relevance to the novel (isolation of synchronized strains of subepidermal cells of muscadine grapes pericarp) as disclosed by applicant" (App. Br. 13). Appellant further contends that "there is no reason whatsoever to combine Cormier with Gray and Pastrana-Bonilla" (Reply Br. 8).

The Examiner finds it obvious

> to modify the method of Cormier et al. by using Muscadine grape as taught by Gray et al. and use the **skin, pulp and seed** of the cultivar **Noble** as taught by Pastrana-Bonilla et al. One of ordinary skill in the art would have been motivated to do so knowing that Noble cultivar contain a high level of flavonoids as taught by Pastrana-Bonilla

(Ans. 9).

We find the Examiner has the better position. Cormier teaches culturing berry fragments to form strains of subepidermal cells (FF 1) which berry fragments were identified by the Examiner as part of the pericarp (*see* Ans. 7), and Cormier grows the berries in culture media containing vitamins, plant growth regulators, carbohydrate source, and a solidifying agent (FF 1). Cormier differs from the claim solely in the species of berry used for generation of the strains. The Examiner reasonably relied upon Pastrana-Bonilla to teach that muscadine grapes, including the species Noble, were known equivalent grapes to those used by Cormier and desirable because

"the nutraceutical industry may use the muscadine seeds and skins as potential sources of phenolics" (FF 6). Thus, the Examiner provides a specific reason to select muscadine grapes for use in the method of Cormier, as a phenolic source.

Appellant contends that Cormier is directed to "calusogenesis originated from the mesocarp of the berry" while Appellant "obtains the calusogenesis originated from the subepidermal layers of the skin (pericarp) of the berry" concluding that "applicant is using a different part of a different berry for different ends" (App. Br. 10–11).

The Examiner responds "the Pericarp consists in Endocarp, Mesocarp, and Exocarp so the mesocarp taught by Cormier et al. is a part of the Pericarp" (Ans. 7).

Appellant does not rebut or otherwise address this finding by the Examiner in the Reply Brief, and we find the Examiner's position persuasive.

Appellant contends "the Office's motivation to combine the cited art has been improperly gleaned from Applicant's own specification and that the combination of Cormier, Gray, and Pastrana-Bonilla is an exercise of impermissible hindsight" (Reply Br. 11).

We are not persuaded. While we are fully aware that hindsight bias may plague determinations of obviousness, *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966), we are also mindful that the Supreme Court has clearly stated that the "combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR*, 550 U.S. at 416. In the instant case, Cormier teaches culture

of grape fragments (FF 1) to obtain compounds such as anthocyanins (FF 2) and Pastrana-Bonilla teaches that muscadine grapes are a known type of grape that produces phenolic compounds useful in the nutraceutical industry (FF 4–6). We agree with the Examiner that selection of such a known species for use in a known method is a predictable use of known options, and Appellant provides no evidence of any secondary consideration rendering such a combination unobvious.

Conclusion of Law

The evidence of record supports the Examiner's conclusion that the prior art renders claim 4 obvious.

SUMMARY

In summary, we affirm the rejection of claims 4, 7, and 11 under 35 U.S.C. § 112, second paragraph as indefinite.

We affirm the rejection of claim 4 under 35 U.S.C. § 103(a) as obvious over Cormier, Gray, and Pastrana-Bonilla. Claims 7 and 11 fall with claim 4.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED